

# Crystal restructuring for better ice cream

**Kalyan Ray**

**NEW DELHI:** Everyone wants their chocolate and ice cream to taste better and last longer. Scientists in Bangalore have unravelled the science behind making of these lip-smacking food items.

Besides improving chocolates and ice creams, even the quality of margarine—a common item in the breakfast table for Indians—may also change for the better, if manufacturers want to reap the benefits of the research undertaken by Bangalore scientists who went to France for carrying out a high-end experiment.

If applied on an industrial scale, the new research may lead to major quality improve-

ment in the food items. From a scientific perspective, however, the findings are more basic in nature. The researchers provided a new understanding underlying crystal formation, which may be of interest to the food processing industry, “Its nice basic science with an industrial connect,” Ajay Sood, a professor of physics at Indian Institute of Sciences in Bangalore, who led the team told *Deccan Herald*.

In the last 50 years, food industry created new food items with internal micro-structure, rich in crystals. Margarine, for instance, has a network of fat crystals which form its backbone. The fat molecules can crystallise in three forms, out of which only structure is pre-



**Ajay Sood**

ferred in margarine.

Sood and his colleagues at Jawaharlal Nehru Centre for Advanced Scientific Research and **Raman Research Institute** studied crystal formation under an external stress factor known as shear to learn how the crystal-formation can be tweaked for industry's benefit.

Depending on shear, the

crystal formation process vary in materials. Forming crystals of right shape and size lies at the core of improving not only chocolates, margarine and ice creams but a range of personal care products such cream, toothpaste and lubricant gels, too.

The study, published in the August 26 issue of *Proceedings of National Academy of Sciences*, suggests how the industry could manipulate the crystal formation to improve product quality. Chocolate, ice cream and margarine contained layers of sub-microscopic crystals which imparted taste, stability and texture to the food, Sood said.

The raw material for chocolates is cocoa-butter, which

contains four types of saturated and unsaturated fats. They can form crystals in six possible ways but only one of the them is good in taste. “There are scopes to further improve the stability, texture and even taste of chocolates,” he said. The research by Sood and his colleagues Vikram Rathee, Rema Krishnaswamy, Antara Pal and **V A Raghunathan** can open up a new window in drug delivery too.

The experiment conducted at the University of Paris with the assistance of two French researchers illustrated how body's internal physical condition can be used as shear to trigger release of a particular drug inside the body.

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